

REMARKS

The Applicant appreciates the thorough review of the application by the Examiner. Reconsideration and allowance are requested.

No new matter has been added by the amendments. No new issues are raised by the amendments.

Claims 1 - 13 are patentable under 35 U.S.C. 103(a) over Clifford (US 4,542,640) in view of Petit (US 5,447,705).

Claims 1 - 13 are patentable over Clifford in view of Petit.

Obviousness is tested by what the combined teachings of the references would have suggested to those of ordinary skill in the art. It cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Teachings of references can be combined only if there is some suggestion or incentive to do so. *In re Fine*, 5 USPQ2d 1596, 1599 (Fed. Cir. 1988).

Citing *In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984), the court pointed out, "the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification". *In re Fritch*, 23 USPQ2d 1783, 1784 (Fed. Cir. 1992).

"It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch*, 23 USPQ2d 1783, 1784 (Fed. Cir. 1992), quoting from *In re Gorman*, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). "This court has previously stated that one cannot use hindsight

reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." Id. quoting from *In re Fine*, 5 USPQ2d 1600 (Fed. Cir. 1988).

There is nothing in Clifford or Petit that suggests the desirability of combining the two references. Examiner states that Petit teaches the use of his catalysts for hydrocarbon catalysis, which is the mechanism by which Clifford performs sensing. Perhaps the Petit catalyst could be used in the Clifford gas sensor, but neither reference suggests that doing so would be desirable. Clifford teaches the use of any of 14 types of sensors. Petit teaches away from the combination of the two references because it states that the purpose of the catalyst is partial oxidation of methane. No person having ordinary skill in the art would think to combine the Petit catalyst, for oxidation of methane, with the Clifford gas sensor, to come up with a gas sensor selective for a particular gas, without interference from other components of the atmosphere, including moisture (relative humidity), and/or changes in temperature. The only motivation for doing so comes from the present application, the use of which is impermissible hindsight.

In addition, even the combination of Clifford and Petit would not teach or suggest all of the elements of Claim 1. The references, alone or in combination, do not teach or suggest that the bulk stoichiometry of the oxide equilibrates with the prevailing oxygen partial pressure. Clifford utilizes the reactions that take place at the surface of an oxide and give rise to changes in charge carrier density that can be sensed by a resistance measurement. The reactions take place at the surface of the oxide, its bulk stoichiometry does not change. Petit is merely a material for catalysis. The present invention uses an entirely different mechanism to sense gas and is suitable for different temperature ranges and conditions than Clifford. Because no references, singly or

in combination, teach or suggest all of the elements of Claim 1, Claim 1 is patentable under 35 U.S.C. 103(a) over Clifford in view of Petit.

Claims 2 - 11 are dependent on independent and patentable Claim 1, and have additional patentable features. Claims 2 - 5 claim composition ranges in which the defect structure of the oxide is optimized so as to assist the bulk stoichiometry equilibrating mechanism of detecting oxygen partial pressure, a marker for exhaust gas composition. No reference teaches or suggests these ranges.

With regards to Claims 6 - 11, if examination at the initial stage does not produce a prima facie case of unpatentability, then without more the applicant is entitled to grant of the patent. In re Oetiker, 25 USPQ2d 1443, 1447 (Fed. Cir. 1992) citing In re Grabiak, 226 USPQ 870, 873 (Fed. Cir. 1985).

In fact, the office action does not provide any basis for the rejection of each of the features in dependent claims 6 - 11 and therefore applicant is unable to determine Examiner's basis for the rejection of each of the claims to adequately rebut the rejections. Therefore, as indicated by Oetiker "without more applicant is entitled to grant of the patent."

Each of Claims 6 - 11 adds patentable features that are not taught or suggested by any reference. Claim 6 adds that the perovskite structure is $\text{PrFe}_{0.95}\text{W}_{0.05}\text{O}_x$. Claim 7 adds that the perovskite structure is $\text{LaFe}_{0.95}\text{W}_{0.05}\text{O}_x$. Claim 8 adds that the perovskite structure does not form stable sulfates in environments contaminated by sulfur. Claim 9 adds that minimum doping on the B-site provides a required range of oxygen partial pressure operation. Claim 10 adds a 6-valent ion for doping on the B-site. Claim 11 adds that the 6-valent ion enables a p-type range of the perovskite structure for use over a range of oxygen partial pressures of interest for

monitoring and controlling the combustion processes. Therefore Claims 2 - 11 are patentable under 35 U.S.C. 103(a) over Clifford in view of Petit.

Independent Claim 12 is patentable over Clifford in view of Petit because neither reference teaches or suggests all of the elements of the claim. Clifford does teach a sensor that is screen-printed on a substrate, but it does not teach or suggest reacting starting material oxides in stoichiometric proportions in a molten salt, yielding a powder, screen-printing the powder on a substrate, or forming a microstructure. Therefore, Claim 12 is patentable under 35 U.S.C. 103(a) over Clifford in view of Petit.

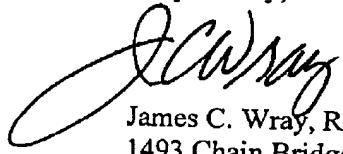
Independent Claim 13 is patentable over Clifford in view of Petit because neither reference teaches or suggests all of the elements of the claim. Examiner asserts that Clifford teaches plotting the resistance of the sensor to monitor and control combustion processes in response to a received signal. However, Applicant is unable to find the parts of the reference referred to. Applicant requests that Examiner provide the column and line numbers of the relevant sections. Clifford does not teach or suggest a method of sensing combustion status of an atmosphere of combustion gases at all, nor does it teach or suggest a method that monitors and controls combustion processes responsive to change sense in a sensor material.

Therefore, Claims 1 - 13 are patentable under 35 U.S.C. 103(a) over Clifford in view of Petit.

CONCLUSION

Reconsideration and allowance are respectfully requested.

Respectfully,



James C. Wray, Reg. No. 22,693
1493 Chain Bridge Road, Suite 300
McLean, Virginia 22101
Tel: (703) 442-4800
Fax: (703) 448-7397

Date: July 18, 2006